Airedale by MODINE

MultiChill Propane

Modular Heat Pump Chiller

Cooling 35–73kW
Heating 40–86kW

MultiChill Propane

Connect with comfort

With an increased focus on health and wellness in society, more attention is being given to thermal comfort and its relationship to productivity, general wellbeing, and staff and customer retention.

From the workplace to leisure venues such as gyms, cinemas, and retail outlets, end-user expectations are much more sophisticated and competition is high, meaning factors such as air quality, air temperature and low background noise are no longer seen a benefit, they are a must-have.

In urban areas where demand for space is tight and plant equipment can be cumbersome, consultants and contractors are tasked to provide energy-efficient thermal comfort solutions that meet the brief of the end-user, whilst adhering to legislation like Ecodesign and Part L building regulations.

Meeting the needs of end-users whilst complying with regulations and budgets can be a headache for the supply chain. Airedale by Modine understands these market dynamics and has developed a range of flexible solutions for comfort applications.

Airedale by Modine is the critical cooling specialist, with the technology and expertise to meet the specific operational demands of mission critical industries worldwide. We take a partnership approach to ensure we deliver the optimal solution, be it from our standard range or a customised design for projects delivered at scale.

Our global solutions encompass high efficiency air and liquid cooling and filtration systems, reversible heat pumps, intelligent controls software and comprehensive aftersales support.

Airedale by Modine

Renowned for the expertise of our people, with world class products and plants, Airedale by Modine is proud of its R&D ethos being firmly rooted in sustainability and quality. We are committed to deliver best-in-class technical design, energy performance, project delivery and ongoing lifecycle optimisation; all of which comes together to support our clients in meeting their performance, efficiency and sustainability goals.

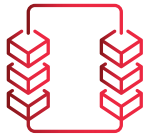
With a global network of facilities, encompassing R&D laboratories, test chambers, production, training and sales offices, Airedale by Modine has sites in Leeds (UK), Bradford (UK), Consett (UK), Guadalajara (Spain), Dubai (UAE), Rockbridge (US), Grenada (US), Calgary (Canada) and Chennai (India).

Airedale by Modine is part of Modine (NYSE:MOD), a diversified global leader in thermal management technology and solutions. Together we aim to engineer a cleaner, healthier world™.

MultiChill Propane

MultiChill Propane is Airedale by Modine's range of propane heat pumps, designed for modular installation. It further expands the MultiChill range to include ultra low GWP refrigerant R290 (GWP 3) and is part of our sustainable range of cooling and heating solutions, offering class-leading efficiency for high water temperature applications up to 75°C.

Optimised for ultra low GWP refrigerant R290, MultiChill Propane is a highly sustainable solution for comfort applications. It has a much lower refrigerant charge than traditional refrigerants, and can deliver high water temperatures of up to 75°C.



MultiChill Propane is modular in design, allowing multiple units to be configured together to provide increased capacity, flexibility and scalability to meet the exact design requirements without compromising on performance. Up to 16 units can be connected in a local network, delivering a total capacity of 1168kW cooling and 1376kW heating.

A highly sustainable solution, MultiChill Propane delivers high efficiency, low noise performance, covering 7 different module sizes from 35kW to 73kW cooling capacity and 40kW to 86kW heating capacity.

Operational in ambient temperatures as low as −20°C, MultiChill Propane is suitable for the most demanding applications in both comfort and process applications.

Optimised for R290, MultiChill Propane delivers up to SEER 5.36 making this a sensible, sustainable option for refurbishment and decarbonisation schemes.

Heat Pump Cooling Capacity: 35–73kW
Heating Capacity: 40–86kW

Ultra low GWP natural refrigerant propane (R290)
GWP 3

SEER up to 5.36
EER 2.86
SCOP W55 3.63

Connect up to 16 units in a local cooling /heating network

Inverter compressors
R290 GWP 3

Water production up to 75°C
Operation guaranteed in ambient temperatures as low as −20°C

MultiChill Propane Heat Pump Features and Benefits explained

Controls

The inbuilt, pre-programmed controller offers:

- Auto-restart function.
- Timer on/off setting; daily/weekly scheduling.
- Display components status.
- Display queries, error codes and parameters.
- Two multi-authorisation control levels.
- Modbus connection as standard.
- Connection of up to 16 units in parallel.
- Suitable for remote use.

Climatic compensation with outdoor air temperature:

- Cooling operation: if outdoor temperature increases outlet water set-point will decrease automatically to allow a higher cooling capacity to the system.
- Heating operation: if outdoor temperature decreases, heating capacity supplied will increase automatically in order to keep comfortable heating performance.

Advanced features

- Ultra low GWP R290 (GWP 3).
- High seasonal efficiency in heating and in cooling.
- Class A Eurovent.
- Silent mode and super silent mode for night operation.
- Modular solution.

Extra features

Domestic Hot Water Production

- Multichill Propane is capable of hot water production up to +75°C which is ideal for DHW applications.
- Optional 3-way valve can be supplied integral to the unit.
- Management of DHW will take priority over the general heating demand.
- DHW production can be integrated into a modular system.

1 **Inverter Controlled Compressor**
Delivers reduced energy consumption, exact capacity match and superior temperature control.

2 **EC Inverter Fans**
DC brushless fan motors help to meet heating and cooling demands with low noise emission and low power consumption. Both fans and fan guards are designed with CFD technology, ensuring silent and highly efficient operation.

3 **Plate Heat Exchanger**
High efficiency heat exchanger, providing low pressure drop and a reduction in pump power.

4 **Hydrophilic Coil**
External exchanger is made by:

- Inner threaded copper pipes that optimise the heat exchange efficiency.
- Hydrophilic treatment allows the correct evacuation of condensing water and prevents ice formation.
- Condenser drain tray with electric heater to collect condensation without freezing.
- Protective coatings available as an option.

5 **Electronic Expansion Valve**
EEVs are included on all units as standard. An EEV's ability to maintain control of the suction superheat at reduced head pressures provides significant energy savings. This can result in an energy efficiency ratio (EER) increase of up to 30%.

Optional

Inverter-Controlled Pump and System Tank
Reduces installation time, cost and space requirement.

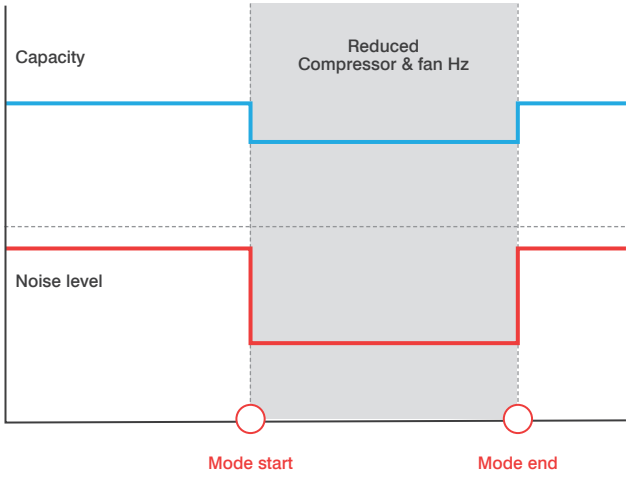
Advanced Features

MultiChill Propane reversible heat pumps are available with various options and a wide range of operating temperatures.

Acoustic Performance

MultiChill Propane has three different sound configurations for maximum flexibility in noise sensitive applications:

Standard sound levels	
Silent	Sound levels are reduced by −2 to −4 dB(A)
Super Silent	sound levels are reduced by −4 to −6 dB(A



Double Set Point Management

MultiChill Propane can manage two different set points in heating and cooling operation.

- simple to set up through user interface
- set points activated through dry contact terminal board

Double setpoint			
Double setpoint	◀	Disable	▶
Setpoint Cool_1	◀	7°C	▶
Setpoint Cool_2	◀	10°C	▶
Setpoint Heat_1	◀	35°C	▶
Setpoint Heat_2	◀	30°C	▶
OK	◀	▲ ▼	▶

For an even greater energy saving

Safety as a Priority

A3 Refrigerant Safety

Refrigerant R290, commonly known as Propane is classified as a class A3 substance in line with British Standard BS EN 378-1. This means it has low toxicity, high flammability properties.

Highly flammable gases are in common use throughout the UK, for example in hot water boilers and cooking appliances. Propane is widely and safely used in supermarkets and is now being introduced to other commercial and industrial settings as a more sustainable solution, replacing inefficient gas boilers. In the same way that we work safely with existing gas appliances, we must continue to do so with R290.

As a means of mitigating risk, we have applied the following safety features to MultiChill Propane:

- Double division between control box and refrigerant circuit box – there is no direct contact between the refrigerant circuit and the control box
- Air wall for R290 leakage, allowing for ventilation and refrigerant extraction in the unlikely event of a leak
- Leak detectors for early detection in the unlikely event of a leak
- Refrigerant circuit box extraction fan
- A3 refrigerant risk assessment (enhanced safety)

Low Refrigerant Charge

- Single compressor models < 5kg, dual compressor models 10kg
- Below the threshold where stringent installation regulations apply

Electrical Panel

- Electrical panel is separated from the cabinet containing the compressors
- Leak detection sensor fitted as standard
- Unique design allows cooling to be provided to the panel via the condenser fans, also includes switch for manual activation
- Compliant with BS EN 60204

Compressor Cabinet

- Extract fan & leak detection sensor fitted as standard
- All components suitable for ATEX zone 2 installation

Safety Valves

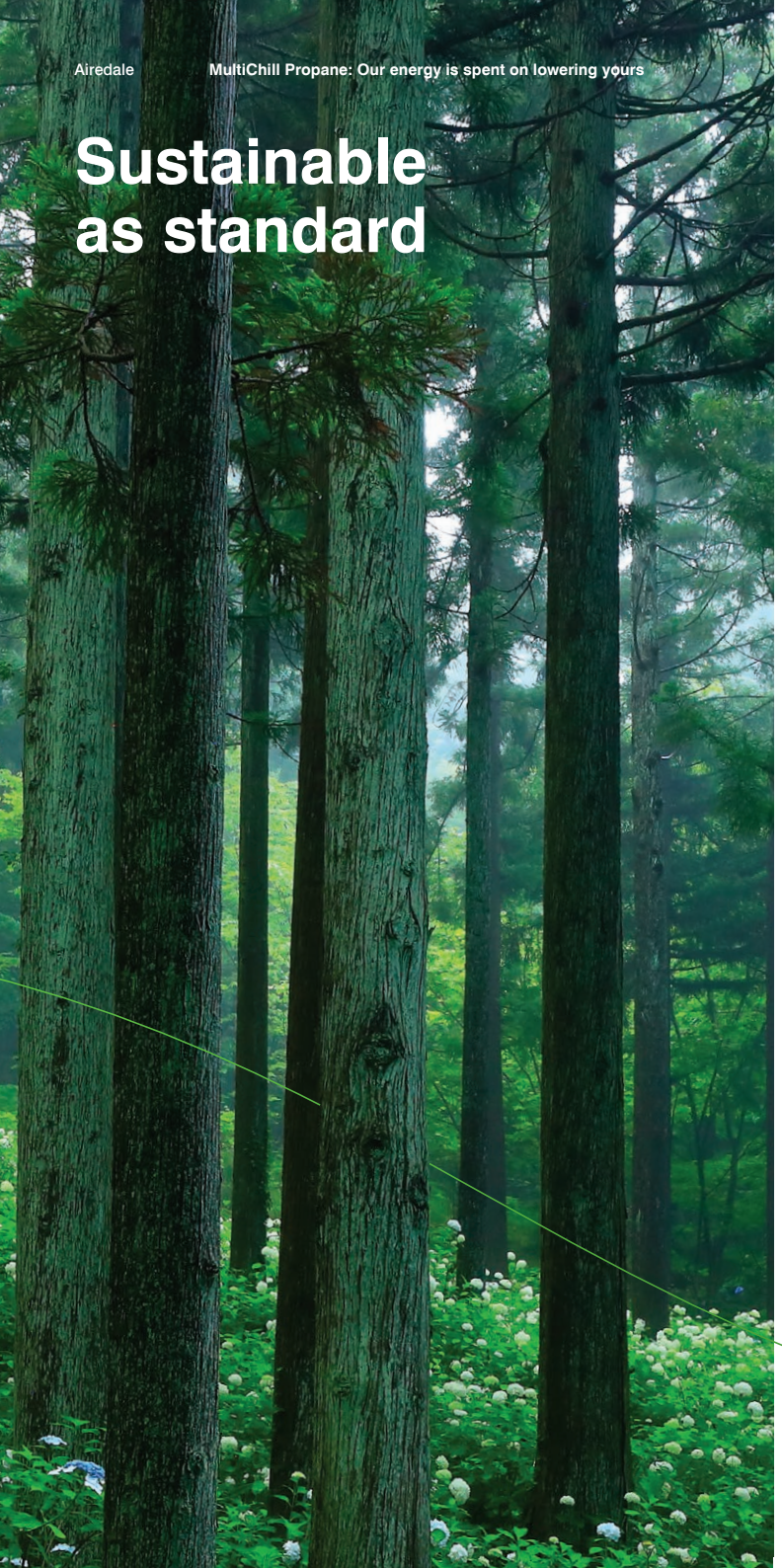
- Safety valves can be accessed remotely, external to the compressor cabinet

General Safety Consideration for Installation, Operation & Maintenance

Maintenance and service work requiring the assistance of qualified personnel must be carried out under the supervision of an engineer competent and qualified in the use of flammable liquids, including BS EN 13313 and/or BS EN 22712.

Competent engineers must be able to understand and apply the requirements of BS EN 378-4.

All Airedale service engineers designated to perform service and maintenance on these products are fully qualified to do so.



Sustainable as standard

At Airedale by Modine, we believe that energy efficiency should be driven not only by legislation, but by a genuine will to reduce air conditioning's cost to our customers and the environment. As part of this commitment, the MultiChill Propane range includes the following energy saving technologies as standard:

R290 Propane Refrigerant:

Sustainability: Propane has a very low global warming potential (GWP) of just 3. This is much lower than other traditional alternatives, making propane a much more sustainable option.

Energy Efficiency: Propane-based refrigeration systems are typically 10–30% more energy-efficient. This means they use less electricity to achieve the same level of performance, leading to lower energy bills.

Buffer Tank:

Factory fitted buffer tanks are available as an option, in two sizes, providing either 150L or 240L depending on model size. The buffer tank assists in providing minimum water volume and reduced compressor cycling.

Heat Exchanger:

MultiChill Propane comes with a plate heat exchanger as standard, delivering large exchange surfaces to maximise thermal efficiency.

Compressors:

All Multichill Propane heat pumps are supplied as standard with low-noise inverter compressors for a wide operating envelope, exact capacity match and best part load efficiency. This enables system water volumes to be reduced and lowers energy consumption by more than 30%.

Pump Options:

A single or dual inverter pump is available as an option for increased efficiency and reduced energy use. Optional integrated pumps save:

- Time and cost for the set-up.
- Floor area for pumping equipment and relevant clearance.
- Inverter pumps can manage variable water flow, providing energy savings for the system at part load operation.

Electronic Expansion Valve:

EEVs are included on all units as standard. An EEV's ability to maintain control of the suction superheat at reduced head pressures provides significant energy savings. This can result in an energy efficiency ratio (EER) increase of up to 30%.

Condenser Fans:

Condenser fans are EC brushless type providing low noise and minimum low power consumption.

Domestic Hot Water Mode:

Allows DHW production of up to 75°C, directly managing the main components of the system. Management of domestic hot water has priority over the system. The 3-way valve is available as a built-in solution.

MultiChill Propane
Modular Configuration

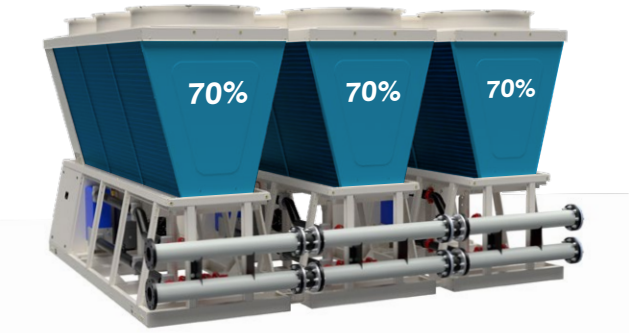
MultiChill Propane is available as a modular system, enabling simple interconnection of up to 16 units in a 4 × 4 arrangement, delivering up to 1376kW of installed heating capacity. The controller can manage 16 MultiChill Propane units to deliver increased system efficiency, part load operation and redundancy.

In a modular configuration, the part load efficiency benefits of MultiChill Propane are further enhanced. Each unit can perfectly adjust its output thanks to the single advanced microprocessor that controls the process with optimal precision. In the event full load capacity is not required, the system will balance the load across the installed units, providing maximum part load efficiency.

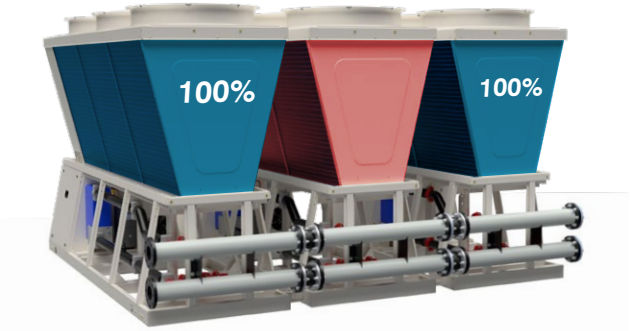
The benefits of modular configuration:

- Perfect solution when full capacity is needed only for short time during the year.
- Scalability – to suit the needs of the site and the physical space.
- System management is simple and operates up to 16 units grouped in a 4 × 4 arrangement.
- Load balancing improves part load performance.
- When full system capacity is not requested, modules do not operate at 100%.
- Capacity supplied is set by the master unit, based on the outlet water temperature and set-point temperature.
- Activation of the slave units follows “first in, first out” logic.
- Loading/unloading of the units depends on temperature differential vs. set-point and the availability of adjacent units.
- In a multi-unit system, if one module fails, the other modules provide backup so that the system can continue operating.
- Duty cycling – equalizing the running time of the outdoor units in a multiple-unit system significantly extends compressor lifespan.
- Separate electrical feeds provide true electrical redundancy.
- Independent refrigerant circuits provide true mechanical redundancy.
- Protection mode assures system continuity if master unit suffers malfunction. If master unit fails, the master address is assigned to another module.
- Different capacity modules can be combined together.
- Simplified handling and installation – MultiChill Propane units are pre-wired in the factory with fast connections between units. This guarantees a remarkable installation speed. MultiChill Propane also offers scalability: it is possible to add more units if the load increases.
- Like-for-like concept as gas boilers.
- Wider operating envelope compared with high capacity packaged solutions.
- Increased reliability compared with packaged solutions.
- Scalability to match the increasing demand over time.
- Compact footprint with header kit, in-built pumps and tank options.

Enhanced modularity to guarantee the best performances.



- Ability to combine different sizes to get the right capacity required for the application while optimizing the efficiency at the same time.
- The master unit is in charge of managing the whole capacity provided by the system, fixing the load percentage of each unit.



- Back up operation choosing the correct sizes combination.
- Independent refrigerant circuit and power supply for each unit, for full redundancy.

MultiChill Propane

Space-saving installation with all the benefits of modularity

- **Optimised air flow** for minimum clearance.
- **Frame design** specially developed for modularity.
- **Integrated** system tank.

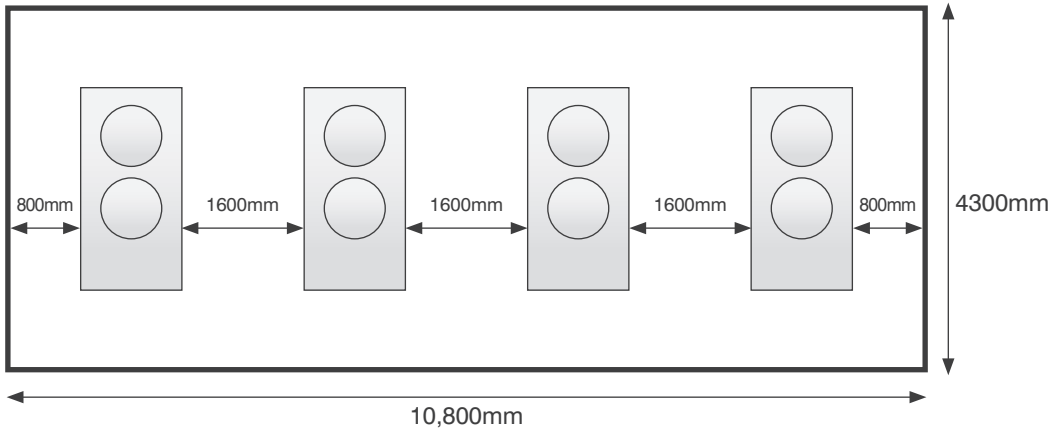
Case study

280kW heating load | Same redundancy

40%
Space saving

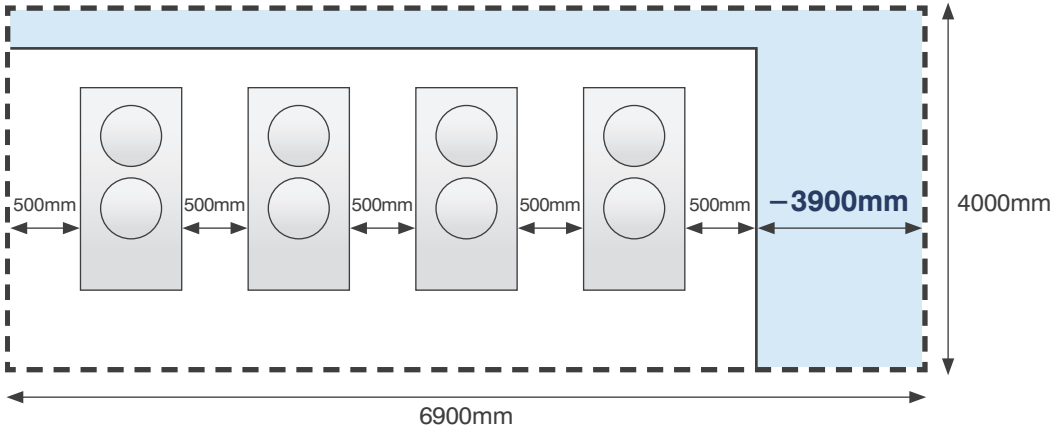
Competitor A

Size: 4 × 70kW



Airedale by Modine MultiChill Propane

Size: 4 × 70kW



MultiChill Propane
Technical and Performance Data

MultiChill Reversible Heat Pump

Operates in cooling only mode via dipswitch mode selection. The table opposite details the model selections available.

MultiChill Propane

Ref.	Circuits	Nom. cooling capacity (kW)	EER	Nom. heating capacity (kW)	COP	SPL @ 10m dB(A)	Dimensions (mm) (H × W × L)	SEER (gross)	SSCEE	SCOP – W35	SSHEE – W35	SCOP – W55	SSHEE – W55	Weight (kg)
MCHP R290 14.1	1	34.9	2.84	39.9	3.11	43.1	2240 × 1094 × 2384	5.36	211%	4.51	177%	3.54	139%	689
MCHP R290 16.1	1	38.5	2.81	45.2	3.08	43.1	2240 × 1094 × 2384	5.20	205%	4.45	175%	3.51	137%	689
MCHP R290 18.1	1	49.9	2.58	55.1	3.19	45.1	2240 × 1094 × 2384	4.73	186%	4.29	169%	3.39	133%	737
MCHP R290 19.1	1	54.0	2.46	61.5	3.13	45.1	2240 × 1094 × 2384	4.58	180%	4.23	166%	3.38	132%	737
MCHP R290 20.1	1	58.2	2.35	68.5	2.92	46.1	2240 × 1094 × 2384	4.36	171%	4.15	163%	3.36	131%	737
MCHP R290 25.2	1	67.8	2.86	78.6	3.14	45.8	2240 × 1094 × 3402	5.47	216%	4.70	185%	3.63	142%	1001
MCHP R290 30.2	1	72.7	2.64	85.9	3.01	46.8	2240 × 1094 × 3402	5.30	209%	4.54	179%	3.60	141%	1001

We are there when you need us

Life cycle support for critical cooling

Our UK based 24/7 emergency helpline and call out service is available 365 days of the year, ensuring that we are always on hand to provide expert advice and immediate help, day or night. Guaranteed emergency response times mean that a qualified Airedale by Modine engineer* will be with you in an agreed timeframe, therefore maximising your system's uptime.

For non-UK clients, we offer a service partner network across Europe and the Middle East.

Choose the right service and maintenance contract for you

Our air conditioning service plans offer a preventative air conditioning maintenance service solution to improve system resilience and increase the longevity of your cooling system.

Planned maintenance not only assists in preventing unit breakdowns in business-critical environments, but also helps to improve energy efficiency and enhance system optimisation for improved performance. Over the life cycle of the product this can lead to reduced running costs, improved carbon footprint and quicker returns on investment.

Unrivalled spares service

We have high volumes of spares in stock at our global facilities, ready for fast dispatch to our engineers and customers. We can deliver worldwide.

*A1, A2L and A3 class refrigerants covered.

Vodafone data centre update

"Reliability and the level of service that Airedale offers are key issues for a business critical location such as this. The project ran very smoothly."

Headquarters

Airedale by Modine
1500 De Koven Ave
Racine
WI 53403-2552
E: connect@airedale.com